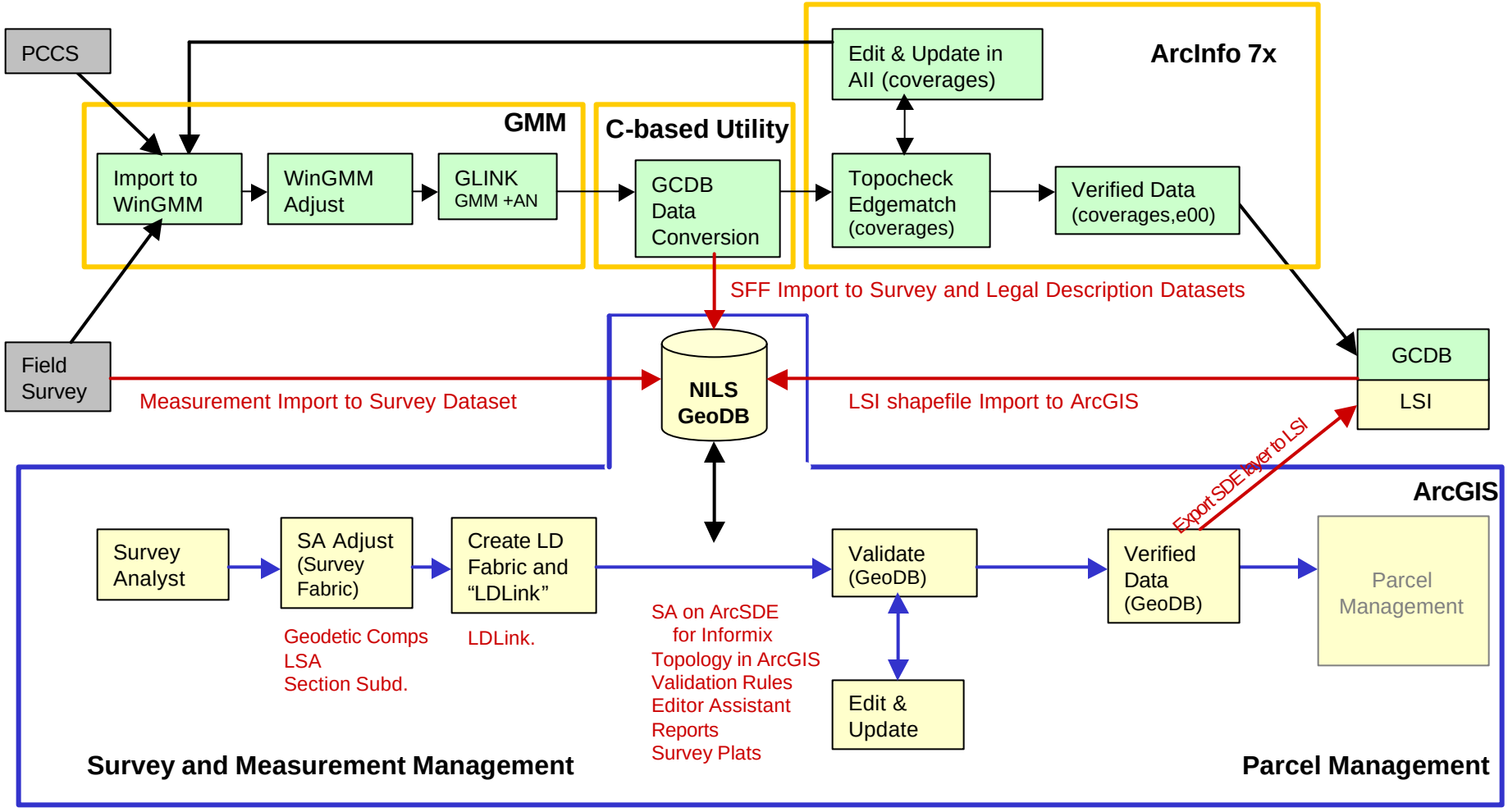
SM/MM Data Prep

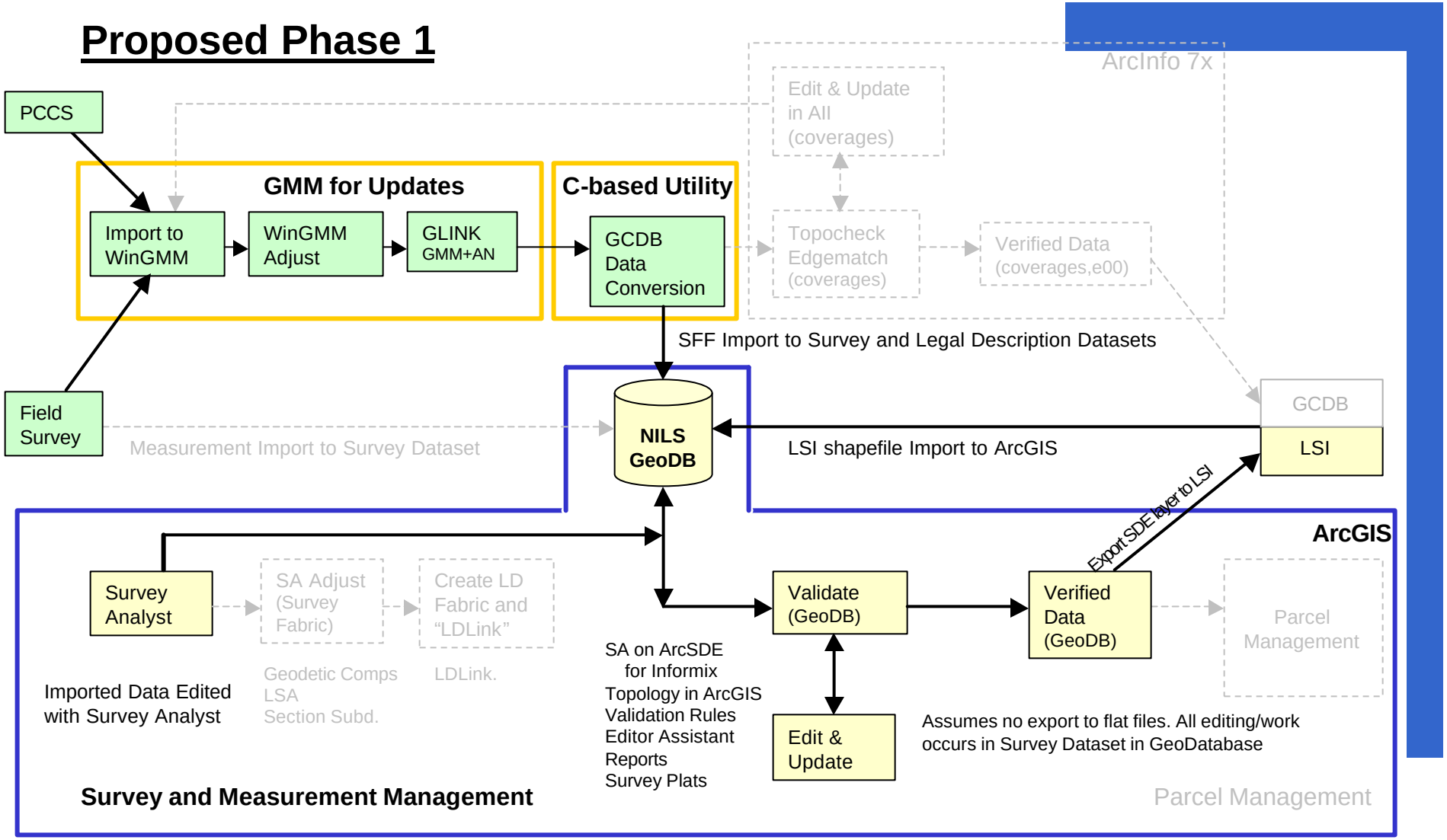
Current Workflow Process



General Requirements…

Workflow/Job Management
Manage Feature and Source Level Metadata
Manage Feature Lineage and Status
Edit Auditing/Process History
Administer Access Rights/Security

Proposed Phase 1



General Requirements…

Workflow/Job Management
Manage Feature and Source Level Metadata
Manage Feature Lineage and Status
Edit Auditing/Process History
Administer Access Rights/Security

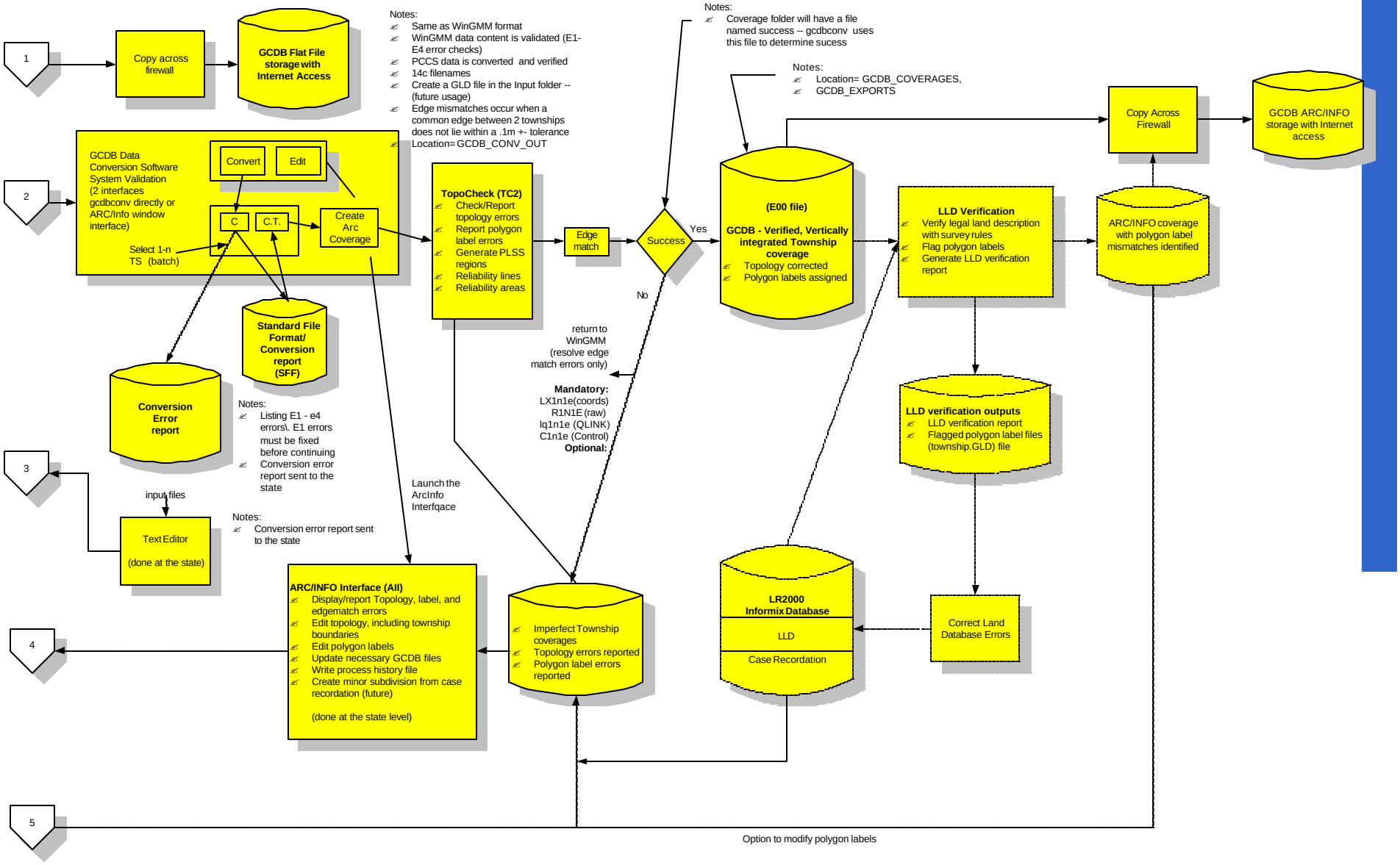
Target Completion – September 2002

GCDB Data Prep Steps

Current GCDB Data Prep process is a complicated series of steps and interactions between the Data Prep software (ArcInfo Interface) and WinGMM

- Import SFF Data
  - Generate Error Report
- Build Coverages
- Run TopoCheck
  - View Error report
  - Fix Topology Errors
- Edge Match Townships
  - View Error Report
  - Fix Edge Match Errors
- Generate Reliability Lines
- Export data for GCDB download site (e00)

Existing GCDB Data Prep Process



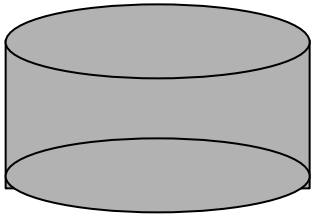
SM/MM Data Prep Process

Proposed process is more streamlined with editing occurring in the NILS database

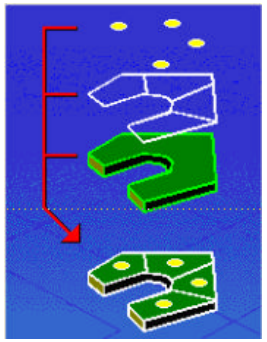
- Import SFF Data
  - –Generate Error Report
- Create GIS Features and Analyze Topology
  - –View Error report at any time
  - –Map Based reporting
  - –Use Error report to fix intersection, edge match and attribute errors in SM/MM
- Export data to publication database
- Download Data from LSI

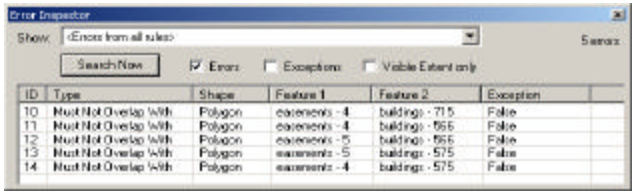
SM/MM Data Prep Process

Import SFF into Survey Dataset



Create GIS Features & Analyze Topology

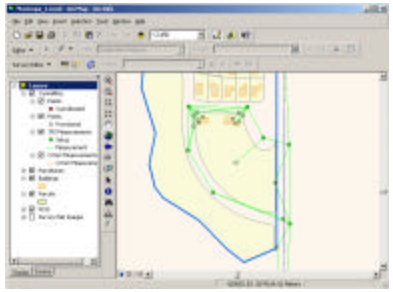




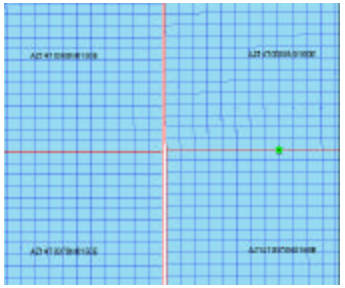
On the Fly Reporting

Iterative Editing of Database

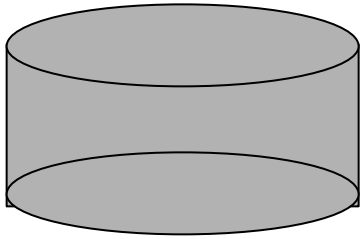
Edit Attribute Errors



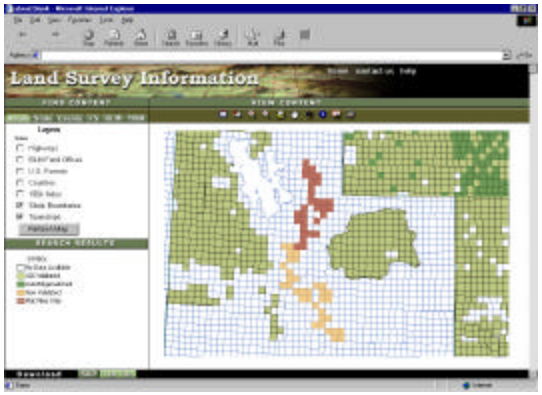
Edit Edge Match Errors & Intersection Errors



Export data for LSI site



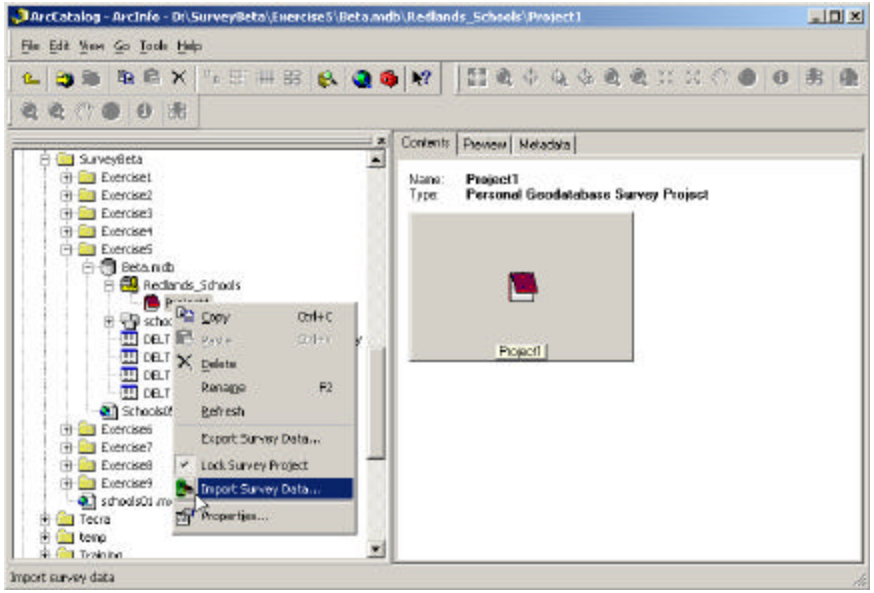
Download Data from LSI



Import SFF Data into Survey Dataset

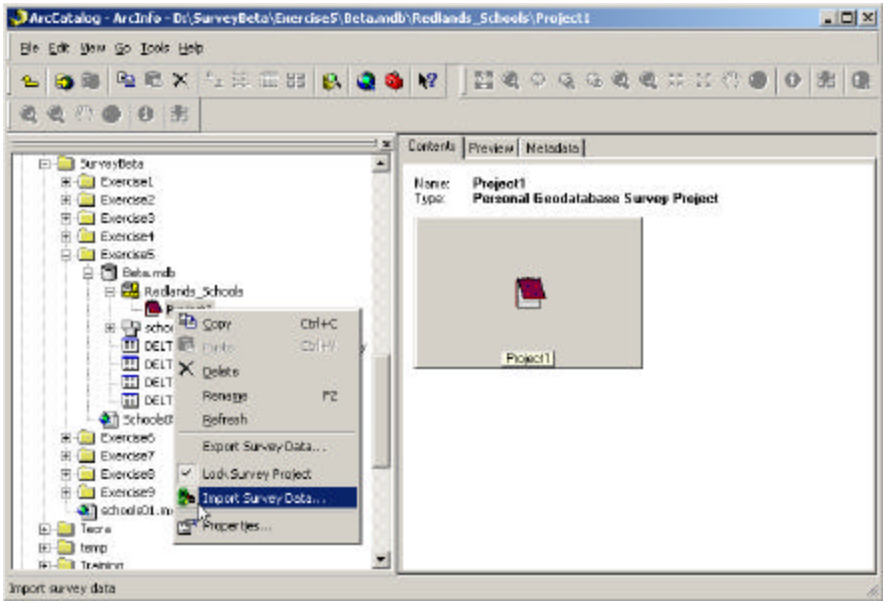
This process imports SFF data into a Survey Analyst survey dataset

- The following files are initially imported
  - township.avl
  - township.con
  - township.def
  - township.lx
  - township.not
  - township.raw
  - township.sid
  - township.an
  - township.met
  - township.q
- Conversion report is generated



Import Data to Projection of the Dataset

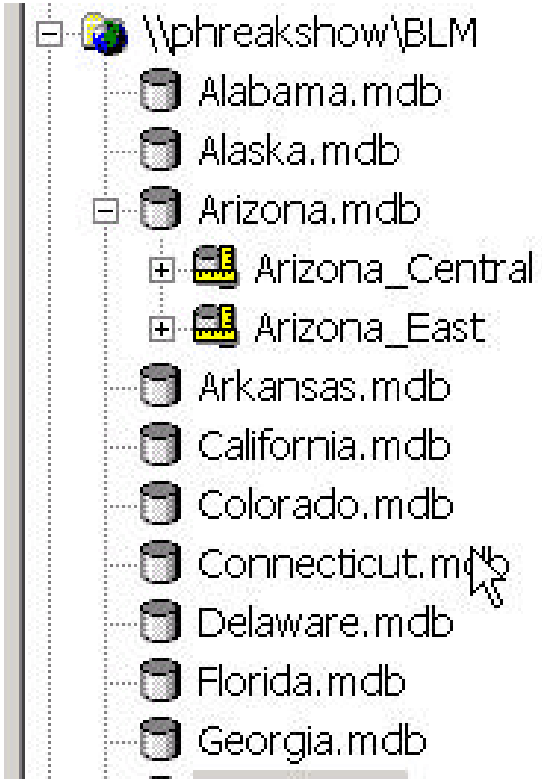
- Survey Analyst will convert imported data to the projection of the survey dataset
- Import process can convert data from one projection/datum to another.
- GCDB data can be converted from NAD 27 to NAD 83 as it is imported into Survey Analyst.

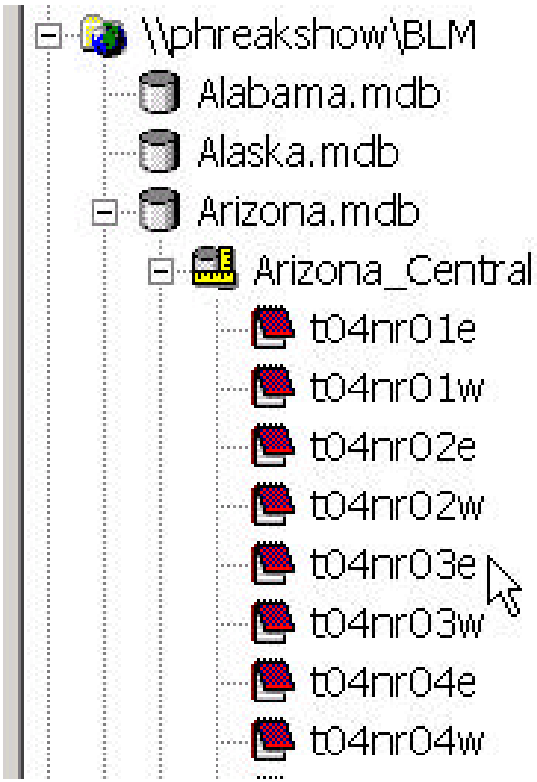


Survey Data Storage and Organization

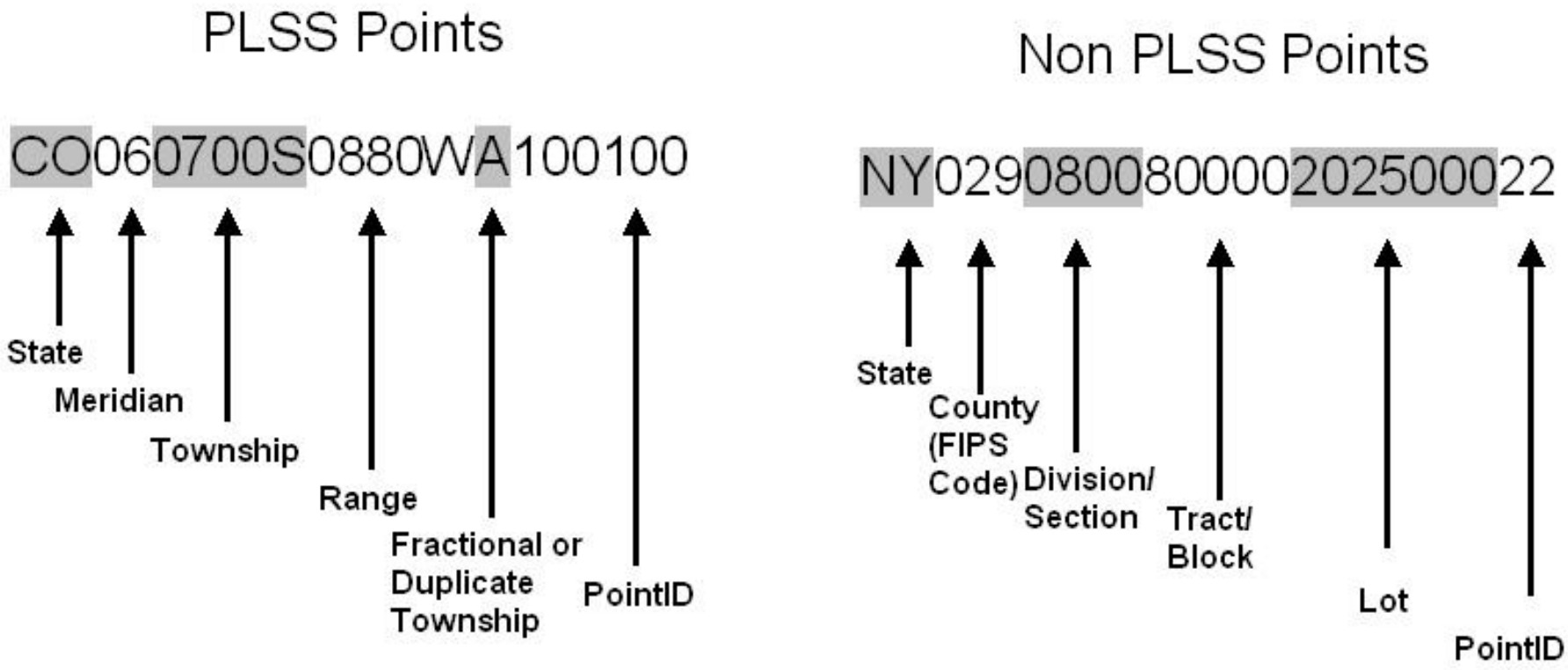
Data storage and organization within the geodatabase is currently being tested in the SM/MM POC.

Different methods are being tested for optimal use and performance





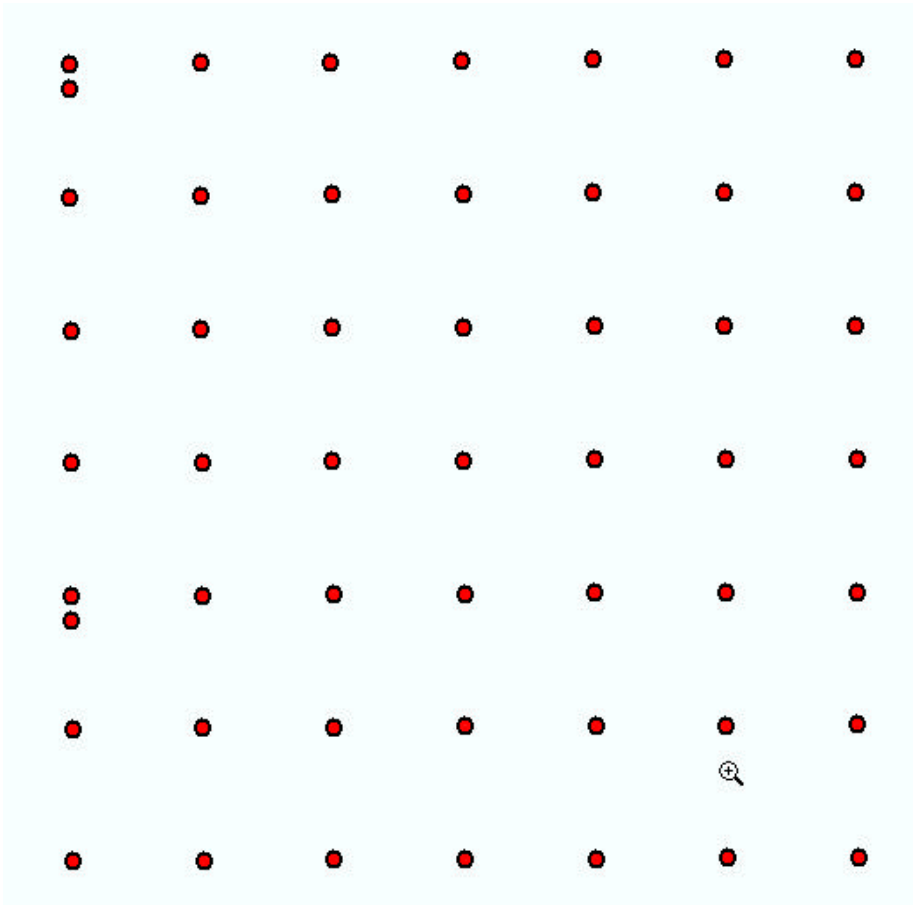
Unique PointIDs Are Assigned



Unique Point IDs will be assigned for all points in the database. Will accommodate both PLSS and Metes and Bounds Surveys

Imported Survey Data

Imported survey data forms the survey network which controls the geometry of the Legal Description Fabric

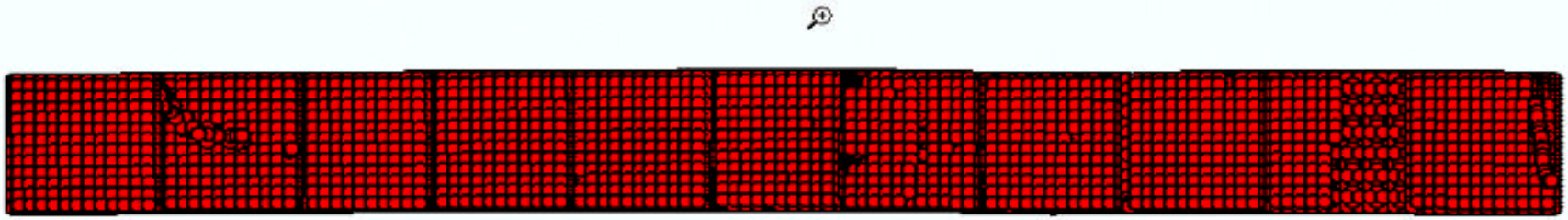


Example of imported control points (Arizona township T04NR18E, East Mercator)

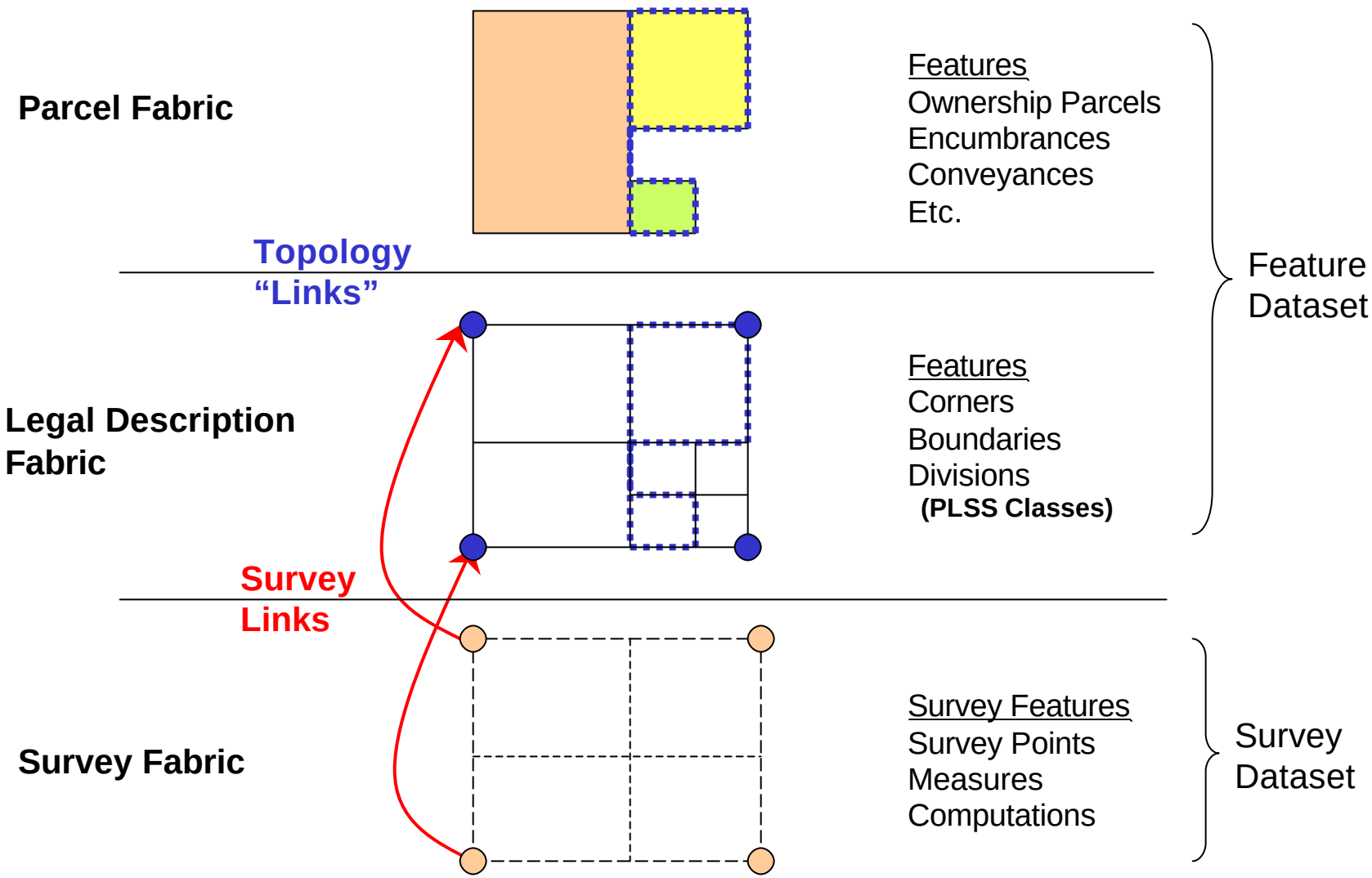
Create Features from Survey Data

- To analyze the survey data and to check for topology errors and to edge match the townships, the data must be converted from survey features to GIS features.

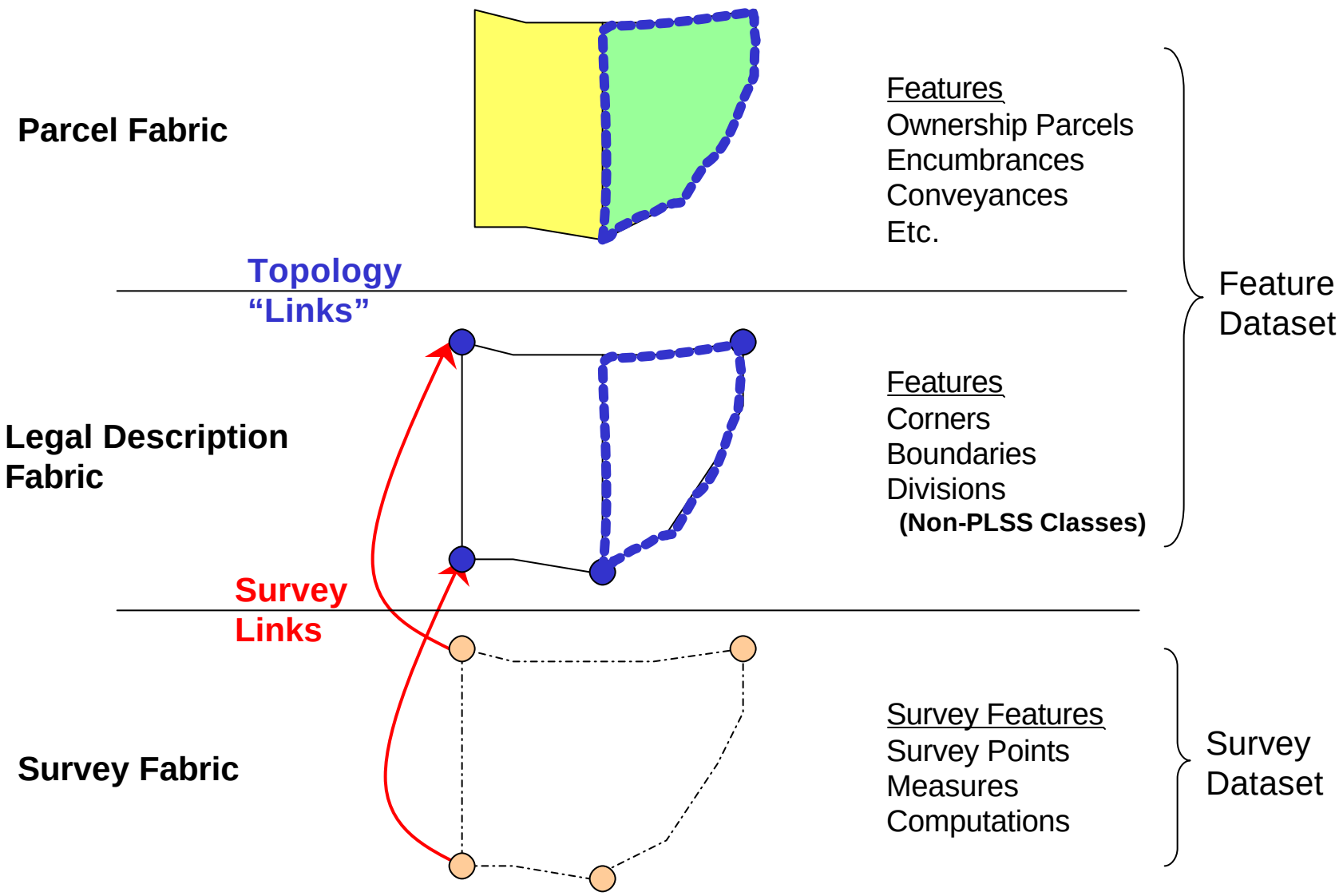
- In NILS, we call this the legal description fabric



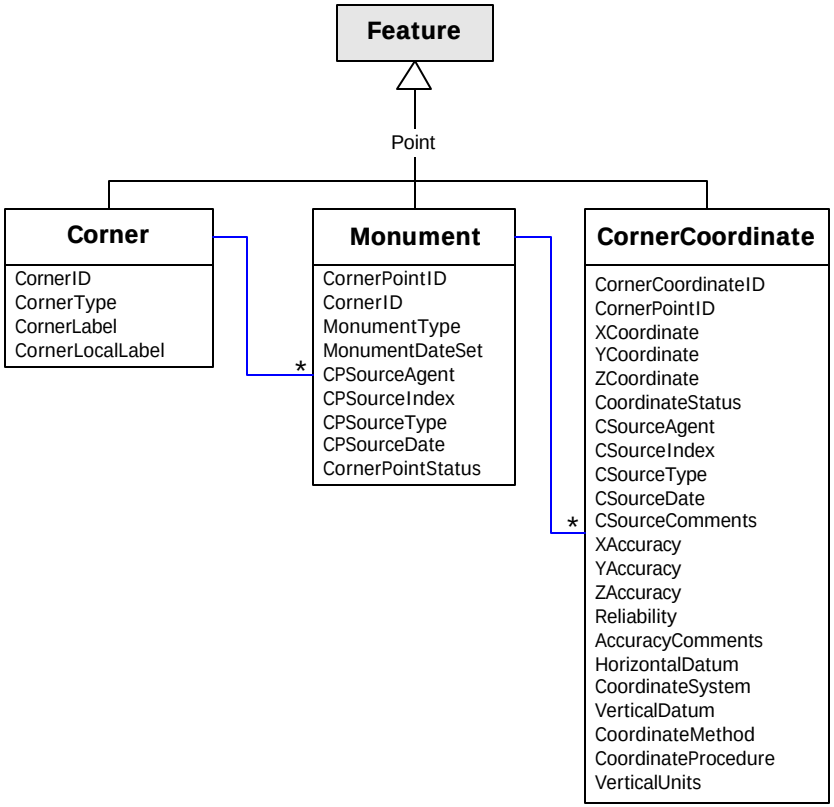
NILS Conceptual Data Model

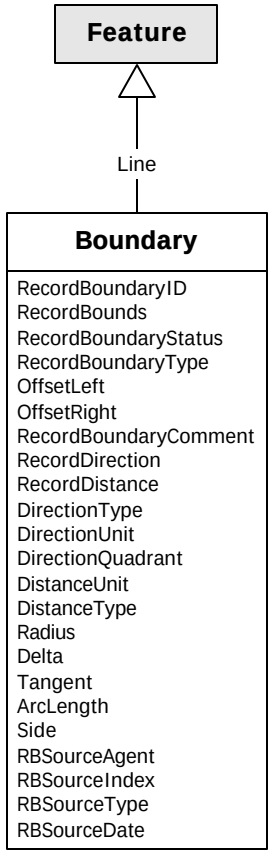


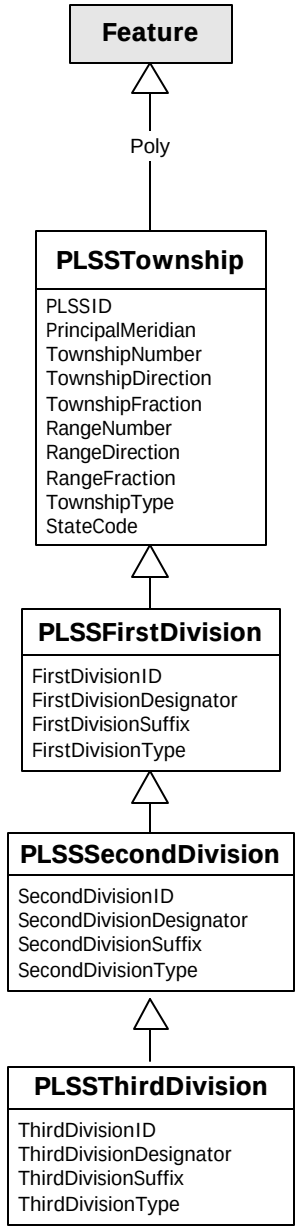
NILS Conceptual Data Model



Feature Classes Based on ArcGIS Parcel Data Model







Legal Description Fabric

- The legal description fabric is a feature class representation of the survey fabric

corners, measurements, computations

vs.

points, lines, polygons

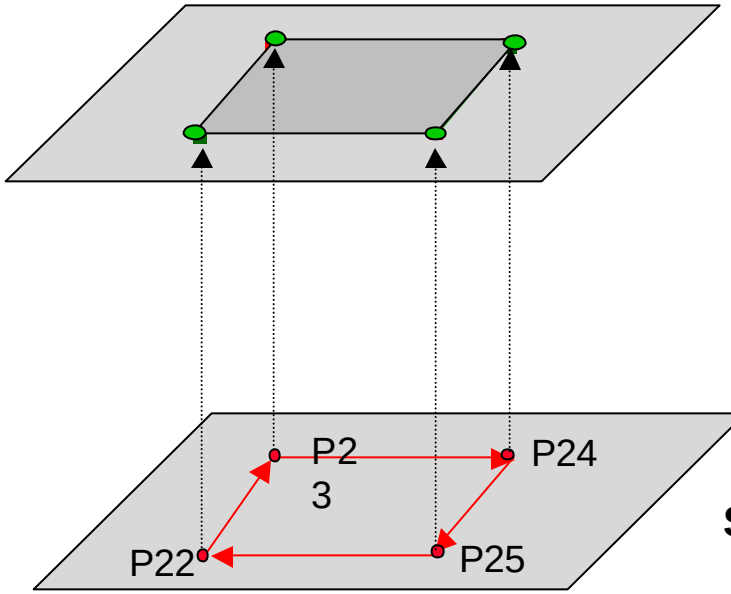
- Changes in the survey fabric can be used to update the legal description fabric
- Changes in the legal description fabric, do not propagate down to the survey fabric

Survey Fabric

Legal Description Fabric

Feature linking in Survey Analyst controls the updates to the Legal Description Fabric

Can update boundary geometry in LDF



Legal Description Fabric

New control, new survey etc

Survey Network

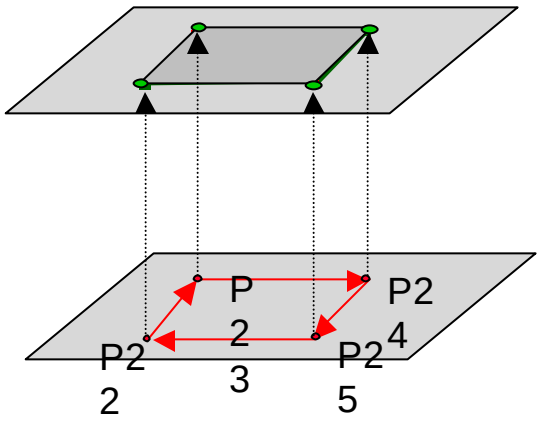
Because this is a one way transaction, we need to establish business rules as to WHERE the data is edited.

Edit the Survey Fabric - Survey Analyst tools

Edit the Legal Description Fabric - ArcMap tools

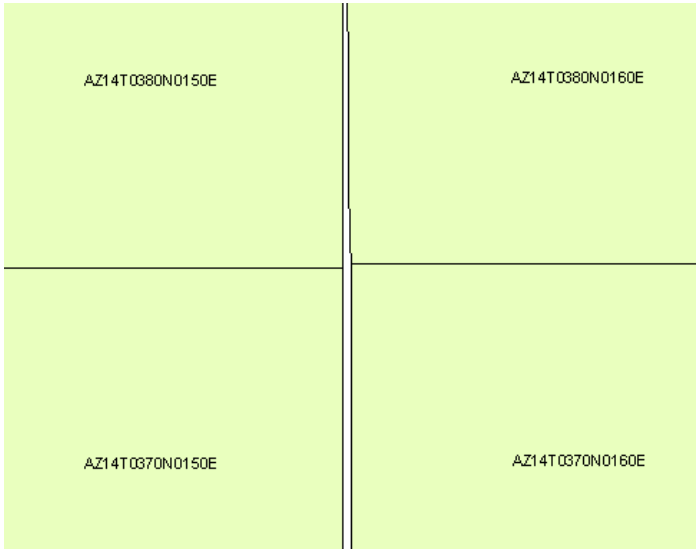
Edge Match Errors

- Edge match errors are represented as violations of a rules in the topology
  - No Gap in Polygon Feature Class
  - No Overlap in Polygon Feature Class
- Edge match errors need to be fixed in the Survey Fabric
- Once updated in Survey Fabric, the changes can update the features in the Legal Description Fabric.



Legal Description Fabric

Survey Fabric

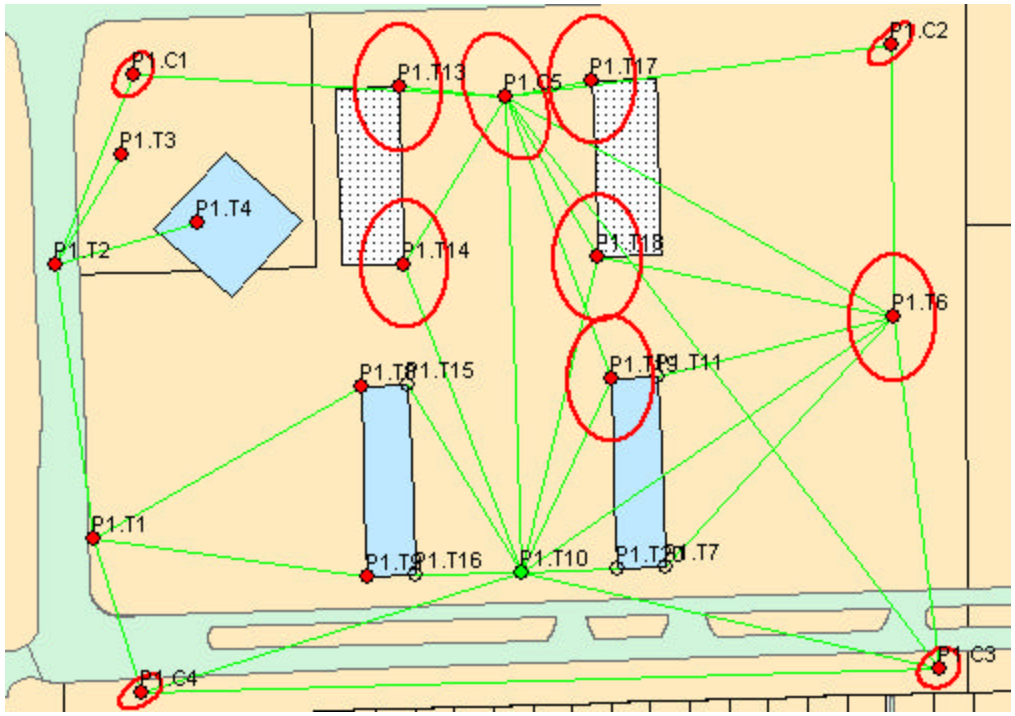


Attribute Errors

- Attribute errors can be viewed and verified.
- Tools will allow user to
  - Update attributes
  - Modify attributes
  - Delete attributes

Reporting: Error Ellipses

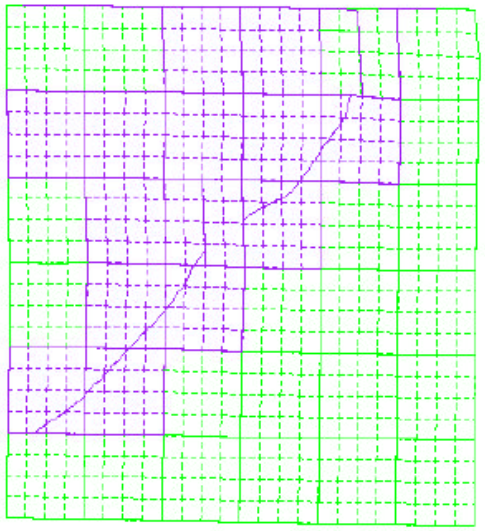
- Survey Analyst allows the use and display of error ellipses on survey points.
- These may be used to generate reliability lines



Reporting: Reliability Lines

- Reliability lines can be generated on the fly as a map based report

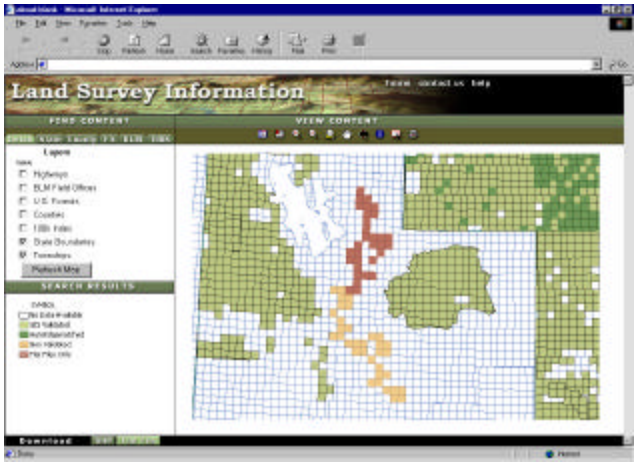
Dashed	Computed lines
Solid	Surveyed Lines
White	0 feet
Blue	1 - 3 feet
Purple	4 - 40 feet
Green	200 + feet



Export Data to LSI

Ability to create SDE export files for the LSI website

- COORDS – coordinates (point)
- COORDMEAS – control points (point)
- RECBND – record boundary (line)
- TWNSHP – township (poly)
- FIRST – township first division (poly)
- LADESC – legal area description (poly)



The End.